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What is claimed is:

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1. An immunoregulatory composition comprising isolated mannose receptor-bearing cells and a conjugate comprising an antigen and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes.

2. The composition of Claim 1, wherein said mannose is partially reduced mannose having aldehydes.

3. The composition of Claim 1, wherein said mannose receptor-bearing cells are derived from a cell population selected from the group consisting of peripheral blood leukocytes, bone marrow, stem cells, tumor cells, stromal cells, peritoneal cells, spleen, lung and lymph node cells.

4. The composition of Claim 1, wherein said mannose receptor-bearing cells comprise cells that are enriched for cells selected from the group consisting of macrophage cells and dendritic cells.

5. The composition of Claim 1, wherein said mannose receptor-bearing cells comprise cells that express molecules selected from the group consisting of mannose receptor, CD11b, CD14, CD68, CD80 and CD86.

6. The composition of Claim 1, wherein said mannose receptor-bearing cells are combined with said conjugate *in vitro*.

7. The composition of Claim 1, wherein said mannose receptor-bearing cells are combined with said conjugate *ex vivo*.

8. The composition of Claim 1, wherein said mannose receptor-bearing cells comprise cells that have been contacted with one or more biological response modifiers.

9. The composition of Claim 8, wherein said biological response modifiers are capable of inducing mannose receptors on a cell capable of expressing said mannose receptors.

10. The composition of Claim 8, wherein said biological response modifiers are selected from the group consisting of a cytokine and a vitamin.

11. The composition of Claim 8, wherein said biological response modifiers are selected from the group consisting of GM-CSF, interleukin-3, interleukin-4, vitamin D, GM-CSF, M-CSF, Flt-3 ligand and TNF alpha.

12. The composition of Claim 1, wherein said antigen is selected from the group consisting of nm23, p53, Her2/neu, MUC1, BRACA1, BRACA2, MAGE antigen, CEA, ErB2, pollen, hepatitis C virus (HIV) core, E1, E2 and NS2 proteins,

Plasmodium faliciparum circumsporozoite protein, HIV-gpl20/160 envelope glycoprotein, streptococcus surface protein Ag, influenza nucleoprotein, hemagglutinin-neuraminidase surface infection, TcpA pilin subunit, VP1 protein, LMCV nucleoprotein, Leishmania major surface glycoprotein (gp63), Bordetella pertussis surface protein, rabies virus G protein, Streptococcus M protein, respiratory syncytial virus (RSV) F or G proteins, Epstein Barr virus (EBV) gp340 or nucleoantigen 3A, hemagglutinin, Borrelia burgdorferi outer surface protein (Osp) A, Mycobacterium tuberculosis 38kDa lipoprotein or Ag85, Neisseria meningitidis class 1 outer protein, Varicella zoster virus IE62 and gpI, Rubella virus capsid protein, Hepatitis B virus pre S1 ag, Herpes simplex vims type I glycoprotein G or gp D or CP27, Murray valley encephalids virus E glycoprotein, Hepadds A virus VP1, polio virus capsid protein VP1, VP2 and VP3, chlamydia trachomatis surface protein, Hepatitis B virus envelope Ag pre S2, Human rhinovirus (HRV) capsid, papillomavirus peptides from oncogene E6 and E7, Listeria surface protein, Varicella virus envelope protein, Vaccinia virus envelope protein, Brucella surface protein, a combination of one or more of said antigens, an amino acid subunit of said antigens comprising five or more amino acids in length or combinations of one or more of said subunits.

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13. The composition of Claim 1, wherein said antigen is a mucin polypeptide, one or more repeated subunits thereof, or a fragment of said repeated subunits.

14. The composition of Claim 13, wherein said mucin is human mucin.

15. The composition of Claim 13, wherein said antigen comprises two to eighty copies of the repeated subunits of human mucin.

16. The composition of Claim 13, wherein said one or more repeated subunits of said antigen comprise part of a fusion polypeptide.

17. The composition of Claim 1, wherein said mannose is selected from the group consisting of mannose and a conformational and configurational isomer of mannose.

18. The composition of Claim 1, wherein said mannose comprises a carbohydrate polymer comprised of two or more carbohydrate units.

19. The composition of Claim 1, wherein said composition further comprises a pharmaceutically acceptable carrier.

20. A composition comprising an immunoregulatory mannose receptor-bearing cell population, said population can be derived by culturing mannose receptor-bearing cells under conditions effective to produce said immunoregulatory mannose receptor-bearing cell population, said conditions comprising an antigen delivery medium.

21. The composition of Claim 20, wherein said antigen delivery medium comprises a conjugate comprising an antigen and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes.

22. The composition of Claim 20, wherein said mannose is partially reduced mannose having aldehydes.

23. The composition of Claim 21, wherein said mannose comprises a carbohydrate polymer comprised of two or more carbohydrate units.

24. The composition of Claim 20, wherein said mannose receptor-bearing cell population has been incubated in the presence of one or more biological response modifiers prior to said step of culturing.

25. The composition of Claim 24, wherein said biological response modifier selected from the group consisting of GM-

CSF, interleukin-3, interleukin-4, vitamin D, GM-CSF, M-CSF, Flt-3 ligand and TNF alpha.

26. The composition of Claim 20, wherein said step of culturing is performed *in vitro*.

27. An immunoregulatory mannose receptor-bearing cell population, wherein said immunoregulatory mannose receptor-bearing cell population can be derived by a method comprising:

a) culturing mannose receptor-bearing cells *in vitro* with one or more biological response modifiers to produce an enhanced mannose receptor-bearing cell population; and

b) incubating said enhanced mannose receptor-bearing cell population with a conjugate comprising an antigen and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes, to obtain said immunoregulatory mannose receptor-bearing cell population.

28. The population of Claim 27, wherein said step of culturing is performed from about 1 hour to about 6 hours.

29. The population of Claim 27, wherein said step of culturing is performed for about 3 hours.

30. The population of Claim 27, wherein said step of incubating is performed from about 10 hour to about 30 hours.

31. The population of Claim 27, wherein said step of incubating is performed from about 16 hour to about 24 hours.

32. The population of Claim 27, wherein said mannose receptor-bearing cells comprise cells that are enriched for

cells selected from the group consisting of macrophage cells and dendritic cells.

33. The population of Claim 27, wherein said biological response modifier is capable of increasing the number of mannose receptors on cells.

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34. The population of Claim 27, wherein said biological response modifier is selected from the group consisting of GM-CSF, interleukin-3, interleukin-4, vitamin D, GM-CSF, M-CSF, Flt-3 ligand and TNF alpha.

35. The population of Claim 27, wherein said mannose is partially reduced mannose having aldehydes.

36. The population of Claim 27, wherein said antigen comprises mucin.

37. The population of Claim 27, wherein said antigen comprises human mucin.

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38. A mucin antigen delivery vehicle, comprising an isolated mannose receptor-bearing cell and a conjugate comprising mucin antigen and a carbohydrate polymer comprising mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes.

39. A method for obtaining a population comprising immunoregulatory mannose receptor-bearing cells, said method comprising culturing a population of cells enriched for mannose receptor-bearing cells under conditions effective to obtain immunoregulatory mannose receptor-bearing cells, said conditions comprising an antigen delivery medium.

40. The method of Claim 39, wherein said step of culturing is performed *in vitro*.

41. The method of Claim 39, wherein said step of culturing is performed from about 10 hour to about 30 hours.

42. The method of Claim 39, wherein said step of culturing is performed from about 16 hour to about 24 hours.

43. The method of Claim 39, wherein said antigen delivery medium comprises a conjugate comprising an antigen and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes.

44. The method of Claim 43, wherein said antigen comprises mucin.

45. The method of Claim 43, wherein said antigen comprises human mucin.

46. The method of Claim 43, wherein said mannose is partially reduced mannose having aldehydes.

47. The method of Claim 43, wherein said mannose comprises a carbohydrate polymer comprised of two or more carbohydrate units.

48. The method of Claim 43, wherein said method further comprises incubating said population of cells enriched for mannose receptor-bearing cells in the presence of one or more biological response modifier prior to said step of culturing.

49. The method of Claim 48, wherein said biological response modifier is selected from the group consisting of GM-CSF, interleukin-3, interleukin-4, vitamin D, GM-CSF, M-CSF, Flt-3 ligand and TNF alpha.

50. The method of Claim 48, wherein said step of incubating is performed *in vitro*.

51. The method of Claim 48, wherein said step of incubating is performed for about 3 hours.

52. A method to induce an immune response comprising administering to a recipient animal an effective amount of an immunoregulatory composition comprising mannose receptor-bearing cells and a conjugate comprising an antigen mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes.

53. The method of Claim 52, wherein said mannose is partially reduced mannose having aldehydes.

54. The method of Claim 52, wherein said immune response comprises a cell mediated immune response.

55. The method of Claim 52, wherein said mannose receptor-bearing cells are obtained from an animal that is MHC matched to said recipient animal.

56. The method of Claim 52, wherein said mannose receptor-bearing cells are obtained from an animal selected from the group consisting of said recipient animal, an unrelated donor of said recipient animal and a relative of said recipient animal.

57. The method of Claim 52, wherein said method comprises:

a) contacting said mannose receptor-bearing cells with one or more biological response modifiers to produce an enhanced mannose receptor-bearing cell population;

b) culturing said enhanced mannose receptor-bearing cell population with said conjugate to obtain said immunoregulatory mannose receptor-bearing cell population; and

c) administering said immunoregulatory mannose receptor-bearing cell population to said animal to induce an immune response.

58. The method of Claim 57, wherein said step of contacting is performed *in vitro*.

59. A method to induce an immune response to mucin, comprising contacting an isolated mannose receptor-bearing cell with a conjugate comprising mucin and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes, and administering said contacted cell to an animal.

60. A method for delivering mucin to an animal having natural antibodies therein that bind to mucin, to preferentially induce a cellular immune response to mucin, comprising administering to an animal a mannose receptor-bearing cell that has been contacted with a conjugate comprising mucin and mannose selected from the group consisting of fully oxidized mannose and partially reduced mannose having aldehydes, wherein said mannose receptor-bearing cell is capable of presenting said mucin to a T cell in such a manner that a response is elicited from said T cell.

61. A therapeutic compound, comprising an antigen conjugated to a carbohydrate polymer comprising partially reduced carbohydrate having aldehyde groups.

62. The therapeutic compound of Claim 61, wherein said carbohydrate polymer comprises partially reduced mannose having aldehyde groups.

63. The therapeutic compound of Claim 62, wherein said mannose is selected from the group consisting of mannose and a conformational and configurational isomer of mannose.

64. The therapeutic compound of Claim 62, wherein said mannose comprises a carbohydrate polymer comprised of two or more carbohydrate units.

65. The therapeutic compound of Claim 61, wherein said antigen is selected from the group consisting of nm23, p53, Her2/neu, MUC1, BRACA1, BRACA2, MAGE antigen, CEA, ErB2, pollen, hepatitis C virus (HIV) core, E1, E2 and NS2 proteins, Plasmodium faliciparum circumsporozoite protein, HIV-gp120/160 envelope glycoprotein, streptococcus surface protein Ag, influenza nucleoprotein, hemagglutinin-neuraminidase surface infection, TcpA pilin subunit, VP1 protein, LMCV nucleoprotein, Leishmania major surface glycoprotein (gp63), Bordetella pertussis surface protein, rabies virus G protein, Streptococcus M protein, respiratory syncytial virus (RSV) F

or G proteins, Epstein Barr virus (EBV) gp340 or nucleoantigen 3A, hemagglutinin, Borrelia burgdorferi outer surface protein (Osp) A, Mycobacterium tuberculosis 38kDa lipoprotein or Ag85, Neisseria meningitidis class 1 outer protein, Varicella zoster virus IE62 and gpI, Rubella virus capsid protein, Hepatitis B virus pre S1 ag, Herpes simplex vims type I glycoprotein G or gp D or CP27, Murray valley encephalids virus E glycoprotein, Hepadds A virus VP1, polio virus capsid protein VP1, VP2 and VP3, chlamydia trachomatis surface protein, Hepatitis B virus envelope Ag pre S2, Human rhinovirus (HRV) capsid, papillomavirus peptides from oncogene E6 and E7, Listeria surface protein, Varicella virus envelope protein, Vaccinia virus envelope protein, Brucella surface protein, a combination of one or more of said antigens, an amino acid subunit of said antigens comprising five or more amino acids in length or combinations of one or more of said subunits.

66. The therapeutic compound of Claim 61, wherein said antigen is a mucin polypeptide, one or more repeated subunits thereof, or a fragment of said repeated subunits.

67. The therapeutic compound of Claim 66, wherein said mucin is human mucin.

68. The therapeutic compound of Claim 66, wherein said antigen comprises two to eighty copies of the repeated subunits of human mucin.

69. The therapeutic compound of Claim 66, wherein said one or more repeated subunits of said antigen comprise part of a fusion polypeptide.

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